

## ABSTRACT:

The invention relates to charge pump device and a display driver with a charge pump device. Further it relates to a display module with a display driver using a charge pump device and a telecom terminal having such a display module. To provide a device which needs a charge pump for generating a higher voltage as the supply voltage a charge pump device is proposed containing at least two stages (S), whereby a stage (S) comprises a switch ( $SW_n$ ) and a charge device ( $CS_n$ ) which are arranged to generate a voltage higher than the supply voltage ( $V_{dd}$ ), whereby the stages (S) are arranged in serie and a required multiplication factor (MF) of the charge pump (CP) is adjustable by activating/deactivating a definable number of stages (S), whereby the switches ( $SW_n$ ) of each stage ( $S_n$ ) are arranged in the same way. Thereby it will achieved a freely programmable multiplication factor of the supply voltage and in the same time having switches in the charge pump which are optimized in the power consumption by programming a multiplication factor smaller than the maximum multiplication factor.

Fig. 1